NON-PUBLIC?: N
ACCESSION #: 9103210060
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Nine Mile Point Unit 1 PAGE: 1 OF 04

DOCKET NUMBER: 05000220

TITLE: Turbine Control Valve Linkage Sticking Resulting In A Reactor Scram And Emergency Ventilation System Initiation
EVENT DATE: 02/12/91 LER #: 91-0
2-00 REPORT DATE: 03/12/91

OTHER FACILITIES INVOLVED: N/A DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 078

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Harry Barrett, General Supervisor TELEPHONE: (315) 349-1192
Operations NMP1

COMPONENT FAILURE DESCRIPTION:
CAUSE: X SYSTEM: TG COMPONENT: MANUFACTURER: G080
REPORTABLE NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On February 12, 1991, at 0942 hours, with the reactor mode switch in the "RUN" position, reactor power at about 78%, Nine Mile Point Unit 1 (NMP1) experienced a full reactor scram on high neutron flux. The turbine control system had been experiencing small control valve position oscillations (
hours the turbine control valves closed from approximately 83 percent open to 54 percent open. This caused the reactor pressure to increase from 1005 psig to 1043 psig causing neutron flux to increase to about 100%, which was above the Average Power Range Monitor (APRM) flow biased scram setpoint of about 100 percent. High Pressure Coolant Injection (HPCI) was initiated. The Emergency Ventilation System was initiated.

The cause of the control valve partial closure problem was due to the

primary valve limit stop linkage bushing sticking. The sticking linkage caused a misoperation of the control valves.

The immediate corrective action was to respond to the scram and to perform a normal cool down of the reactor. The cause of the control valve oscillations was investigated.

END OF ABSTRACT

I. DESCRIPTION OF EVENT

On February 12, 1991, at 0942 hours with the reactor mode switch in the "RUN" position, reactor power at about 78 percent, Nine Mile Point Unit 1 (NMP1) experienced a scram on high neutron flux. The turbine control system had been experiencing small control valve position oscillations
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December 30, 1990. At 0942 hours the turbine control valves closed from approximately 83 percent open to 54 percent open. This caused the reactor pressure to increase from 1005 psig to 1043 psig causing neutron flux to increase to about 100%, which was above the Average Power Range Monitor (APRM) flow biased scram setpoint of about 100 percent, which caused the scram. High Pressure Coolant Injection (HPCI) was initiated as a result of the turbine trip or low reactor water level
(both signals were simultaneous). The low reactor water level signal also caused a low level scram which is expected during a turbine trip. The Emergency Ventilation System was initiated as a result of a momentary loss of voltage at I&C bus 130 due to the transfer from normal house service power to offsite power supply.

A normal shutdown after a scram was initiated using N1-OP-43, "Startup, Normal Operation and Shutdown Procedure". Reactor water level dropped after the scram to 24 inches due to void collapse. The bypass valves opened and closed as required, which precluded the need for relief valve actuation. Water level was restored using the feedwater system, HPCI was reset and #11 motor driver feedpump was stopped to control the water level increase. A 4 hour non-emergency telephone notification was made to the NRC at 10:42 a.m. on February 12, 1991, in accordance with 10CFR50.72 (b)(2)(ii). The reactor scram was reset at approximately 9:44 a.m.

II. CAUSE OF EVENT

A formal root cause investigation was performed using NDP-16.01, "Root Cause Evaluations", and determined the cause of the neutron flux scram

was the control valve partial closure, which was due to the primary valve limit stop linkage bushing sticking. The sticking linkage caused the control valves to close from 83% open to 54% open. The sticking linkage caused the control valves to overcorrect causing the partial valve closure. Emergency Ventilation System appears to have been initiated as a result of a momentary loss of voltage at I&C bus 130 due to the transfer from normal house service power supplied by the generator to the offsite power supply.

III. ANALYSIS OF EVENT

This event is reportable in accordance with 10CFR50.73 (a)(2)(iv), "Any event or condition that results in manual or automatic actuation of any Engineered Safety Feature (ESF) including the Reactor Protection System (RPS)". The automatic scram resulted from the high reactor flux initiation signals present at the time of the occurrence. All safety related features acted as designed.

There was no significant safety consequences as a result of this event nor was the reactor in an unsafe condition at any time. Pressure regulator failure is bounded by transients discussed in Final Safety Analysis Report. The initiation of the scram, HPCI and the Emergency Ventilation System are a protective mode of operation and thus performed their intended safety function. The plant was stabilized and the automatic scram reset. The health and safety of plant personnel and general public was not affected.

IV. CORRECTIVE ACTIONS

Short term corrective actions were:

A. Stabilized and cooled down the reactor in accordance with plant procedures.

B. Initiated Work Request 185693 to evaluate the cause of the turbine control valve closure.

C. Initiated root cause evaluations for the turbine control valve closure and the Emergency Ventilation Initiation.

D. Performed corrective maintenance on the front standard including teardown, inspect, and rebuild hydraulic cylinders, mechanical linkage, and heim joints.

E. Inspected and checked the mechanical and electrical pressure regulator setting, including the feedback mechanisms and physical lineup.

These actions are complete.

IV. CORRECTIVE ACTIONS (cont.)

Long term corrective actions included:

A. Evaluating the need to change the preventative maintenance on the turbine Mechanical Hydraulic Control system to ensure the control valves linkage operates properly.

B. Implementing the pending recommendations of the LER 89-14 Supplement 1 regarding reducing the susceptibility of the Emergency Ventilation to spurious initiation signals.

V. ADDITIONAL INFORMATION

A. Failed Components: None

B. Previous Similar Events:

LER 85-05 Reactor Scram Initiated by Reactor Protective System.
LER 84-18 Reactor Scram.

The corrective actions of the previous events were to lubricate the sticky bushings, no long term corrective actions or programmatic changes were made.

C. Identification of components referred to in this LER:

IEEE 803 IEEE 805
Component Function System

Reactor Protective System N/A JC
Emergency Ventilation System N/A BG
Mechanical Hydraulic Control System TRB TG
High Pressure Coolant Injection System N/A BJ

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Nuclear Generation NMP77354

March 12, 1991

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

RE: Docket No. 50-220
LER 91-02

Gentlemen:

In accordance with 10CFR50.73, we hereby submit the following Licensee Event Report:

LER 91-02 Which is being submitted in accordance with 10CFR50.73 (a)(2)(iv), "Any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature, including the Reactor Protection System".

This report was completed in the format designated in NUREG-1022, Supplement 2, dated September 1985.

Very truly yours,

Joseph F. Firlit
Vice President - Nuclear Generation

JFF/MC/lmc

xc: Thomas T. Martin, Regional Administrator Region I
William A. Cook, Sr. Resident Inspector

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